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HOSPITAL DESIGN IN USE

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HOSPITAL DESIGN IN USE

3: Bellshill Maternity Hospital

I - INTRODUCTION

1. The design in use series was started in 1960 to discover how far new hospital accommodation was serving the purposes for which it had been designed, and what conclusions of value to the planning of other new units could be drawn. The first two studies were of the Vale of Leven Hospital and Phase I of the Victoria Hospital, Kirkcaldy, both of particular significance in the history of hospital planning in Scotland. They were planned and constructed with limited experience of modern hospital building and studied during a formative period in the evolution of modern principles of planning and design. Their contribution to the formulation of principles subsequently embodied in the considerable amount of published guide material amply justified the effort expended.

2. Bellshill Maternity Hospital has a similar contribution to make. While the plans were based on subjective and sometimes conflicting information, it is to the credit of all concerned with the project that with little modern precedent they produced such a clearly conceived result. It was in many respects ahead of its time and the experience gained from studying both its better and poorer features has been important in the development of ideas incorporated in the plans for subsequent maternity units, e.g. at the unit being built at Paisley and District General Hospital.

3. Each section of the reports on the Vale of Leven Hospital and the Victoria Hospital, Kirkcaldy, contained a detailed description and commentary on every department of the hospital and concluded with a summary of points relevant to future planning. With the amount and quality of guide material now available, the need for such an exhaustive presentation of design in use studies has passed. The Bellshill study has, therefore, been given a much more concise format, highlighting the main lessons to be learned from an active maternity unit in a form which can readily be assimilated, and indicating aspects which can be followed up in greater detail by those with some special interest .

4. Preliminary discussions were held with officers of the Regional Board and with the Board of Management for Coatbridge, Airdrie and District Hospitals before the review was commenced. The survey group from the Scottish Home and Health Department and the Scottish Development Department included medical, nursing, administrative, architectural and engineering officers. Acknowledgements are due to the senior obstetrician, the matron, deputy matron and numerous members of the hospital staff, the Regional Architect to the Western Regional Hospital Board and Messrs. Gillespie, Kidd and Coia, the Project Architects.

II - BRIEF HISTORY OF THE SCHEME

5. When it was agreed in June, 1953 that a new maternity hospital should be built immediately to the South of the existing Bellshill Maternity Hospital, Messrs. Gillespie, Kidd and Coia were appointed by the Board of Management to design the nurses' home for it. In April, 1955 the same architects were commissioned for the new maternity hospital. In the absence of any such guidance as Building Notes they established the accommodation requirements with the consultant and matron on the basis of their joint experience and visits to other hospitals. In 1955 the proposed complement of 180 was reduced as £450,000 was stated to be the maximum sum available. Later, however, the brief was amended and the number of beds increased from 120 to 132 (ante-natal 44, post-natal 88) with 8 beds for intensive care and 56 special care cots. This did not, however, remove the need to retain some accommodation in the old hospital in which there remained at the time of the survey 13 "abortion" beds, 10 ante-natal beds,

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Scottish Home and Health Department, Hospital Design in Use No. 1, Vale of Leven Hospital. (H.M.S.O.) 1963.
Scottish Home and Health Department, Hospital Design in Use No. 2, Victoria Hospital, Kirkcaldy. (H.M.S.O.) 1965 .

4 labour/intensive care beds, 2 delivery rooms, an operating room, some ancillary rooms and storage space. Also at a late stage in planning the solarium, originally located on the top floor was enclosed to provide a central milk kitchen and 4 additional ante-natal beds and a C.S.S.D. was included in the basement.

6. The new hospital was intended to serve a substantial proportion of the population of Lanarkshire (550,000) in conjunction with the William Smellie Maternity Hospital (56 beds) in Lanark, and Motherwell Maternity Hospital (36 beds). The capital cost of the main building, housing the 140 beds, was £814,000 (including professional fees). The cost of furniture and equipment was £129,000, a total of £943,000. Tenders for the main structure were invited in 1958; the building was completed and opened in 1962.

III - STATISTICAL SUMMARY

7. (a) Approved Bed Complement (1966)

Obstetrics	140
Isolation/abortion	13
Special baby-care cots	56

(b) In-Patients (1966)

Total No. of admissions	6,683
Total No. of deliveries	4,653
Total No. admitted after delivery	77
Maternal deaths	4
Infants born in hospital	4,750
Infants admitted after birth	254
Still births	127
Neo-natal deaths	101

(c) Out-Patients (1966)

At Bellshill Hospital

	1st Visits	*Re-attendances*
Ante-natal	1,995	4,553
Post-natal	377	176
Gynaecological	1,062	646
Paediatric	44	116
Physiotherapy	596	3,223
Mothercraft	352	651
Radio-diagnosis	2,068	106
Total	6,494	9,471

At Peripheral clinics (13)

Ante-natal	5,182	33,778
Post-natal	1,637	416
Gynaecological	227	204
Physiotherapy	409	2,293
Mothercraft	-	-
Radio-diagnosis	-	-
	7,455	36,691

(d) Rates (1966)

Maternal death rate (per 1000 live and still births)	0.86
Still birth rate (per 1000 live and still births)	27.30
Neo-natal death rate (per 1000 live births)	19.60
Peri-natal mortality (per 1000 live and still births)	47.50

(e) Bed Usage (1966)

	Obstetrics	*Paediatrics*
Average duration of stay	8.1 days	5.9 days
% bed occupancy	103.2%	69.6%
Turnover interval	0.25 days	2.5 days

(f) Number of staff employed at June, 1966

Medical staff - whole-time	12
- part-time	15
Nursing staff - whole-time	202
- part-time	40
Professional and technical staff - whole-time	22
part-time	1
Domestic and ancillary staff - whole time	112
- part-time	36
Clerical staff - whole-time	20
Total whole-time	368
part-time	92

Of these 9 medical and 79 nursing staff were resident.

Medical staff from the hospital undertake ante-natal and post-natal work at 13 centres over a radius of some 20 miles from Bellshill. Nursing staff attend some of these peripheral clinics. This work is done in conjunction with local authorities as regards medical staff, health visitors and premises.

The Flying Squad, based at the hospital, had 89 calls during 1966. The majority of these emergencies were for retained placenta, post partum haemorrhage and abortion.

(g) Running Costs

The net cost per patient per week in the year ending 31st March, 1966 was £43.8.10 (the national average). The cost per in-patient case was £45.14.11.

IV - ARCHITECTURE

Design General

8. The main building is a rectangular seven-storey block measuring 255 feet by 68 feet and is 83 feet in height from lower ground floor level. The upper five floors are pierced by four lightwells. each a little over 20 feet square. The only interruptions to the continuous elevational treatment are two glazed escape stairs cantilevered out on the east face of the building, an ambulance canopy at the north end of the block and a glazed vestibule which has been added at the main entrance on the west face. Otherwise the elevational pattern of columns and beams is interrupted only by the slightly recessed curtain wall on the second floor - labour ward and operating theatres. A noteworthy refinement of this pattern, subtly expressing the generally smaller rooms, is achieved by the columns on the upper three floors being set at half the spacing of those on the ground and first floor.

9. The quality and unity of this building owes much to the consistent approach to the design of both exterior and interior details. Through-out the building horizontal bands are recessed back from vertical ones. Examples of the vertical elements standing proud are the column facings which project beyond but are interrupted by the horizontal facing of the floor beams, and similarly the vertical facings in relation to horizontal ones in glazed timber partitions.

10. The formal regularity of the elevations is countered by the random effect of the curtains which are given prominence by the floor to ceiling glazing. Opinions are divided on whether aesthetically this is gain or loss.

Structure

11. The lower ground floor is framed with *in-situ* reinforced concrete columns. Above this level the perimeter columns are precast and the spine columns *in-situ*. Floor beams are precast pierced reinforced concrete with reinforced concrete ceiling slabs in rooms and precast concrete floor slabs in corridors. The flat roof is asphalt and felt on boarding with glass fibre insulation over the concrete ceiling slabs.

12. External walls are of reinforced concrete and brick cavity construction in the lower ground floor. There is curtain walling at the second floor. At all other floors columns and beams are faced with precast concrete units. Purpose made aluminium window frames extend from floor to ceiling and wall to wall with horizontal rails at waist and door head height. Staircases are *in-situ* concrete with non-slip treads. Solid partitions are brick or hollow clay block, plastered and painted. Glazed partitions are timber framed. In bed areas floors are hardwood strip and ceilings are plaster; in corridors floors are cork tiled and ceilings are suspended metal acoustic panels.

Internal Design

13. There is a humane non-institutional quality about the environment inside the building and this is immediately apparent in the entrance hall - an area of about 600 sq. ft. boldly designed with extensive use of contoured glazed tiles, yet reassuring the visitor with the restful effect of acoustic ceiling, long net curtains and a fitted carpet. Part of the hall rises to two floors and is crossed by a gallery at the first floor level. An enquiry point faces the main entrance with a door to the ante-natal clinic to one side and stairs and lifts next to a waiting area with tea bar on the other. The satisfying combination of intimacy and spaciousness is matched by sound functional planning.

14. The impression of calm and unflurried competence owes much to the use of quiet finishes in the circulation areas and to the domestic scale of patients' rooms. The ward units with their extensive sub-division and a high proportion of single rooms offer at the same time privacy and a social environment. The width and quietness of the corridors appear to encourage patients to leave their own rooms and visit each other. The extensive glazing of the corridors both to bedrooms and lightwells gives interpenetration of space in a deep plan form. Sunlight can penetrate completely through the building; to be able to see from one side across to the other gives both intimacy and spaciousness.

15, Some shortcomings must be noted and these are high-lighted in the context of the high architectural standards set in this building. The wholesale use of floor to ceiling glazing has led to problems of heat gain and heat loss which might have been avoided, and also to loss of privacy in certain critical situations. Natural ventilation is by a top-hung window above the upper rail. The main window can be opened for cleaning by releasing a coin operated catch but this type of outward opening window makes cleaning difficult from inside the building. The use of a cleaning hoist cantilevered from the roof proved dangerous and was discontinued. The height of the lower transome rail of the window units determined the level of many workbenches and sinks at a height which has proved too low in use. In areas of high traffic density the cork floor tiles are badly worn. The omission of a vestibule at the front door proved to be a false economy. A steel and glass vestibule and a screen have been added to protect the hall, but the combination of strong winds and wide side hung doors can overpower the closers on the outside doors to the accompanying sound of broken glass. There is criticism of the many horizontal dust catching ledges inside the building and while it is true that it is difficult and frequently expensive to design to eliminate these, the joinery details in this instance have reproduced many ledges which might have been avoided.

V - ENGINEERING

Heating and Ventilation

16. The hospital is heated by low pressure hot water heating coils embedded in concrete in the ceilings, except in the corridors where they are underfloor. In attempting to satisfy design temperature conditions, the heating system was handicapped at the outset by the type and size of window and by the particular way in which the windows could be opened for ventilation purposes. The centre panels in the patient areas were never opened because their fastening were somewhat fragile and by reason of the low level of the sill, the outward opening windows constituted a danger to patients and staff. The top lights, which were in any case insufficient to provide a cool temperature on hot days, were little used. The general tendency was towards overheating in summer and underheating in winter which was accentuated by the absence of zone control of the heating on each floor. No overall automatic temperature control was provided and the engineer was expected to adjust the temperature of the heating water according to his reading of the weather conditions. Nor was it possible to control the heating in particular parts of the building. Certain areas and elevations, particularly corner rooms were generally underheated on windy days due to the expanse of glazing and poorly fitted windows.

17. Many of the rooms on the first and second floors, notably delivery rooms and the intensive care area had to be provided with supplementary electric heating. It was difficult to maintain reasonably exact temperatures in the special baby care rooms which require temperatures up to 85°F. This was due in no small measure to the design of the system of warm air input and extract and was aggravated by the large glass areas and the effect of wind. The extract fans discharging through a cowl on the outer wall were ineffective under strong wind conditions which overcame the fan and caused an inward flow of cold air. In summer, heat from the steam humidifier added to the solar gain through the windows, made it difficult to control the temperature.

18. The control of temperature and ventilation of the theatres was not effective. The plant layout is poor, and filter changing can be accomplished only with difficulty. The temperature and humidity controls are in the theatres but response to them was irregular and aggravated by both heat gains in summer and wind effects in winter. Air from the theatres is discharged through balanced flaps and louvres with fans extracting from the scrub-up and anaesthetic rooms, both discharging direct to the outside. In practice wind effect counteracted the extract and except for the scrub-up room the extracts have been sealed off; thus any designed pattern of air movement has been entirely altered. A conclusion that cannot be avoided is that, due to the location of the theatres on the second floor and the plant room on the roof and because of the existence of the large window walls, the design of a satisfactory heating and ventilation system was unnecessarily difficult. Much the same criticism can be directed at those other areas mentioned where close control of temperature and humidity were required.

19. Owing to the decision to incorporate a C.S.S.D., the X-ray suite is situated above the calorifier room and as a result suffers from overheating although a mechanical ventilation system has been provided. The air for the system is drawn from the lightwell, the temperature of which is at least 5 to 6 degrees fahrenheit above outside temperature in the warmer weather, and under these conditions the ventilation plant is not used. For similar reasons the dark room could not at first be used due to the difficulty of keeping down the temperature which increased with the use of the ventilation plant. A room cooler unit was introduced and this, together with the provision of additional insulation in the calorifier room below improved conditions. In the milk kitchen the extract ventilation cannot deal with the heat gains from solar sources, the water boiler and autoclave.

20. The boilerhouse is situated some distance from the building and consists of three oil fired boilers, originally designed for coal-firing. Difficulties have been experienced with the refractory brick work which had been disintegrating under normal working conditions in a relatively short time. Maintenance costs have been exceptionally high, the boiler refractory brick work having been renewed twice a year and the quarls 4 to 5 times a year.

Ducts and Electrical Services

21. Access to the vertical service ducts is not available on every floor and where provided, the location is inconvenient. Thus for maintenance purposes the services are not readily accessible. The sub-distribution fuse boards on each floor are housed in inadequately recessed cupboards and inspection

or replacement of fuses necessitates the removal of the fuse board covers at the hinges. In general, the provision of power points has proved insufficient.

22. There are examples of defects in relation to lights, light-fittings and switch points. Glare from corridor lights caused disturbance to patients at night. Access to some fittings for cleaning purposes is difficult and requires scaffolding. Certain switch points are badly located, for example, those for the stair and first floor corridor being within the special baby care nursery.

23. The fire alarm took the form of indicator lights on each floor with a buzzer in the telephone room and a bell in the basement. The system proved unsatisfactory as the green indicator lights were insufficiently recognisable. It has since been changed to show a white opal flashing light with an audible alarm alongside.

24. The lift service has caused more concern to the hospital than perhaps any other single item. There are two bed/passenger lifts in the centre of the building and these have given almost continual trouble through breakdowns, causing inconvenience to the hospital staff and the outlay of much engineering staff time and expenditure on repairs. There are in addition two goods/service lifts one at each end of the building, but their usefulness is limited by one fact that they are too small to carry many general items and one of them has to be reserved for the "clean" areas of the hospital. There is also a kitchen goods lift carrying electrically-heated trolleys to all wards. In none of the lifts is the control system completely satisfactory.

VI - FURTHER PLANNING APPRAISALS

Ante-Natal Clinic

25. The ante-natal suite consists of a reception area, a pleasantly informal waiting space, three large consulting/examination rooms, each with two adjacent undressing cubicles. The suite also contains sluice, clinette and test room facilities. A mothercraft teaching room is also provided but its use is affected by ventilation problems due to its internal location.

It was a planning assumption that the obstetrician would move between consulting/examination rooms in the course of a clinic session so that the patients' movements would be minimised and minor procedures could be undertaken in the consulting rooms. There is no doubt that this system of work is appreciated by patients. To fulfil the intention of providing closed and private consulting/examination rooms there are no inter-connecting doors between them. This entails a considerable amount of walking for the staff. During two detailed surveys in this suite the staff raised no objection to the distance between rooms and in the type of suite recommended in the Scottish Home and Health Department Planning Note No. 6* such distances would be significantly reduced.

26. The need for two undressing cubicles associated with each consulting/examination room should be avoided by ensuring that the organisation and staffing at ante-natal clinic sessions allows a pupil midwife to be present in each consulting/examination room. These rooms could have been reduced in size to the recommended area of 180 sq. ft. but when they were planned it was the intention to sterilise instruments in each room. It has not proved necessary to undertake this with the establishment of a C.S.S.D.

It would have been better to provide a greatly reduced area of glazing in consulting/examination rooms, for accommodation to have been made available for a technician undertaking haemaglobin tests at a point near the reception area and if dictation facilities had been provided in each consulting room. In general, however, the planning of the ante-natal suite showed a welcome appreciation of the patient's point of view and further advances in the design of consulting suites for out-patient departments owed much to the original planning at Bellshill.

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*Scottish Home and Health Department Planning Note No. 6, Organisation and Design of Out-Patient Departments. (H.M.S.O.) 1967.

Admission Area

27. Under normal circumstances patients entering the hospital are examined and certain procedures carried out before they are admitted to the wards or labour suite. It is also the policy of the hospital that mothers and babies are seen in the admission area before discharge. For these purposes a suite is located on the ground floor near the ambulance entrance and on a main corridor. It consists of two admission rooms, each with an entrance foyer containing a w.c., bathroom, shower and patients' changing room. The two admission rooms are separated by a workroom containing storage space for equipment, filing cabinets for patients' records, a sink and a work bench.

28. The admission rooms at 228 sq.ft. are larger than necessary even allowing for the fact that the usable space is reduced by three doors opening inwards from the corridor, the foyer and workroom. These also lead to lack of privacy and semi-opaque glass on the corridor side of the room renders this worse, especially when the light in the room is switched on. An area similar to a standard consulting/examination room (180 sq. ft.) should suffice.

29. While the admission unit may appear at first sight to be in a logical position near the ambulance entrance, it is remote from the labour ward, which is on the second floor. This leads to under-employment of skilled personnel, if the admission area is to be staffed at all times. Experience indicates that an admission unit should be located adjacent to the labour suite to ensure the ready availability and optimum deployment of staff and services so long as this does not lead to the labour suite being situated on the ground floor. There should, of course, be an easy access route from the ambulance entrance.

30. Both a bathroom and shower are provided but the bathroom is seldom used. Patients either use the shower or are bathed in bed. The areas planned as patients' undressing rooms are not used and the siting of the sluice/disposal room at one end of the suite has proved inconvenient in practice. No area has been allocated for trolley parking; these therefore remain parked in the corridor at the ambulance entrance.

The siting of a room near the ambulance entrance for the Flying Squad equipment has proved effective.

Wards

31. Each ward floor contains 44 beds. A sister's charge consists of 22 beds made up of ten single, two 2-bedded and two 4-bedded rooms. Each 22-bed unit is planned round two light-wells.

Provided the relationship of the nurse working rooms to each other and to the bed areas is determined on basic functional requirements, "lightwell" plans need not lengthen or complicate traffic routes unduly. During a 24-hour survey of nursing journeys, communication between members of the staff and between staff and patients was good in spite of the fact that the room relationships might have been improved. Patients were clearly appreciative of the level of privacy and amenity provided.

32. The size and relationships of rooms in a ward unit have been defined in studies published since Bellshill was designed.* The following points emerging from experience at Bellshill may, however, be noted.

(a) *Size of nursing charge*

If in a maternity unit acutely ill patients are accommodated in a separate area, the results of the survey would indicate that at least in an ante-natal ward 22 beds represent a slightly uneconomical size of nursing charge; 25 beds would be more economical.

(b) *Number of beds per room*

With patients in one specialty, where the majority are ambulant and move freely between rooms and where the population consists almost entirely of young adults, it is difficult to argue the need for a high proportion of single rooms. There would appear to be less objection to 2-bed rooms in the maternity field than in general ward units. All the usual criteria for the use of single rooms do not apply but there is undoubtedly a need for a proportion of such rooms for the isolation of particular

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*Scottish Home and Health Department Planning Note No. 1, Ward Design (H.M.S.O.) 1963.
Scottish Hospital Centre Centrepiece, "The Functional Analysis of Ward Plans" 1967.

types of patient. On this basis alone, the provision of more than 25% would be difficult to justify, especially when the remaining beds are provided in 4-bed rooms giving each patient the advantage of a corner position.

(c) *Room relationships*

The study emphasises yet again the importance of the location of rooms in relation to the basic functional requirements of the ward. For a ward to work efficiently it is essential to achieve a compact grouping of all bed areas with the essential nurse working rooms. In these wards the supply and preparation rooms which served two units of 22-beds were remote from many of the bed areas they served and were inconveniently related to the disposal/sluice rooms.

A separate linen room which had to be locked and the key returned to the sister's office after each visit resulted in much walking which could have been avoided if the linen had been treated like clean equipment and stored in a preparation room, suitably located within each nursing charge. Again, the kitchen, which was also shared by two 22-bed units, was so placed as to necessitate much extra walking between it and the bed area.

The placing of the nurses' station at a distance from both the sister's office and the other nurse working rooms led to it being underused; this also applied to the room planned in relation to the station for use by doctors. The registration of patient calls at the nurses' station is rendered less effective by the fact that by day it is seldom manned and there is in any case no means of identifying the source of a call .

(d) *Glazing*

For observation purposes glazing down to shoulder level is sufficient. Blinds fitted between areas of fixed double glazing, although a means of providing quick and effective privacy have in this instance given rise to many maintenance problems. This had mainly been due to a variation in sizes, and insufficient stock of spare blinds and the difficulty of opening up the double glazing for blind repairs.

(e) *W.C.s and showers*

There are many advantages in locating W.C.s and showers to open directly off the bed areas they serve instead of opening off a main corridor. Even with an outward opening door, W.C. compartments of 3' 9" x 3' 2" are too small.

(f) *Furniture, equipment and fittings*

(1) *Beds.* In selecting beds for a maternity unit it is important to recognise that they will be moved frequently between departments. They must thus be freely mobile and free from projections which would damage door frames and walls.

(2) *Bedhead Units.* Complex service panels should be avoided. Such controls as are provided should be easily reached and understood by patients.

(3) *Chairs.* The selection of chairs for a maternity department is particularly important. Low "easy" types are unsuitable for expectant mothers.

(4) *Taps.* Where washhand basins are used by patients, pillar or wrist-operated taps are preferable to elbow-operated types.

(5) *Incinerators.* If incinerators are to be installed at ward level, experience at Bellshill where they were introduced during the building stage indicates that in addition to the questions of capacity and ease of cleaning, the alignment of flues must be carefully considered.

Labour Suite

33. The suite consists of eight combined first stage/delivery rooms, a sitting room and the necessary ancillary accommodation. The ratio of first stage/delivery rooms to post-natal beds in 1:11 which is low. The present accepted ratio is 1:5. There are also two "minor theatres" which are used as special delivery rooms and in particular for forceps deliveries. If the combined first stage/delivery rooms are of the recommended size and if two main theatres are provided, the need for these "minor theatres" can be questioned.

Access to this suite is by means of a single pair of doors which are frequently open. These doors form the barrier between the "clean" and "dirty" areas. A small room on the "dirty" side is used for gowning and putting on overshoes, after which it is necessary to cross part of the "dirty" corridor to reach the door. Changing accommodation for staff is provided in the centre of the suite. Had they been planned from the outset it would have been more logical to group all changing facilities at the entrance.

34. The decision to depart from the former practice of planning separate first stage and delivery rooms has been justified in practice. It assures flexibility in use and the patient does not require to be moved at a late stage in labour. In the first stage the patient can either enjoy the company of others in the sitting room or retire to a single private room. This also facilitates visits by the patient's husband.

35. Glazing on the internal walls of the rooms allows the necessary amount of staff/patient observation to be maintained: continuity of staff-patient relationship is facilitated and good co-ordination of patient care can be achieved. All normal deliveries take place in the combined first stage/delivery room.

36. An area of 200 sq.ft. would appear to be the minimum to allow the necessary freedom of movement when more than one member of the staff is in the room at one time. Each room is fully equipped with an obstetric bed and ceiling-mounted lamp. Equipment is pre-packed in the central sterile supply department; scrubbing and gowning take place within the room.

37. Owing to excessive solar heat gains in summer and extreme cold in winter, it has been necessary to double glaze the external windows and provide large window curtains. Venetian-type blinds are provided between the double glazing on the internal walls.

38. A survey of 190 post-natal patients revealed that 80% preferred to be nursed and delivered in the same room. Only 4% said they had found the "clinical" appearance of the room frightening.

39. Certain planning defects have emerged in relation to the ancillary rooms. The need for a separate baby resuscitation room easily accessible from the delivery room has been expressed. A disposal room has been created by combining a domestic service room with an adjacent shower. The location of the pantry outside the entrance to the suite leads to difficulties in practice.

Intensive Care Area

40. Originally planned as theatre recovery area, this ward of 8 beds was partitioned to provide three groups of two beds and two small single rooms. Its location within the labour suite has led to some difficulties in practice e.g. the essential working rooms do contain a pantry and its position within, and not adjacent to, the labour suite, imposes the discipline of staff changing. It is used as the disposal route from the theatres and patients from the labour suite have to pass through its corridor to reach the theatres.

41. It is difficult to move beds in the space available because they are arranged "two deep" from the access lateral corridor. Without cubicle curtains, there is inadequate privacy. Excessive glazing makes the single room too exposed for use by patients suffering from eclampsia.

42. The majority of patients in this area are retained for 24 hours; the longest stay has been three weeks. Patients found to require this type of care include those having I.V. therapy and all patients recovering from general anaesthetics and operations.

Operating Theatres

43. There are two theatres with a shared sterilizing and scrub-up room. As procedure packs are issued from the C.S.S.D., the main use of this room has been for the storage of packs and at 400 sq.ft. it is much too large for this purpose alone. The changing facilities serve both the operating theatres and labour suite: they are inadequate in size and the layout does not allow a logical progression from the "dirty" to "clean" areas.

44. As an indication of the work-load, there were in 1966 some 1,200 surgical inductions of labour, 200 elective and 186 emergency caesarean sections.

Special Care Nursery

45. The functional brief for a special care nursery in a maternity hospital should deal with the size of the unit, its location, its content and the various room relationships. It should be possible to take account of the experience gained at Bellshill where the nursery occupied half of one floor of the building. It is a self-contained unit and its relationship to the rest of the hospital has proved satisfactory.

The increasing use of this nursery can be seen by the following table.

	1962	1963	1964	1965	1966
Babies born in hospital	1,015	1,524	1,855	2,014	1,971
Babies born outside hospital	107	167	132	154	167
Total	1,122	1,691	1,987	2,168	2,138

The internal planning has revealed some points of difficulty.

(a) *Cot groupings*

The cot groups of eight 5-cot rooms, one 10-cot room and two for 2 or 3 cots has proved inflexible in use in view of the various categories of infant.

(b) *Mothers' room*

A room has had to be converted for use by mothers; this facilitates their instruction.

(c) *Changing accommodation*

It is important to estimate in advance the number of nurses who may require changing accommodation and locker space at the same time. At Bellshill the changing room is suitably situated at the entrance to the suite. There are sufficient lockers here but this is not true of other areas of the hospital.

(d) *Milk room*

Since there is a central milk kitchen, the milk room at the nursery is only used for the storage of prepared feeds. This requires a relatively small area of accommodation directly related to the anticipated number of bottles to be stored and whether or not the method of collecting bottles prior to feeding requires more than one person to be in this room at one time.

(e) *Nurse working rooms*

The normal room relationship between preparation and disposal areas should be observed and provision made for the washing of cots.

(f) *Observation*

Easy observation of the cots by a nurse from the corridors is important and this has been satisfactorily achieved at Bellshill. Where the floor plan however permits, it would be better to place all the cubicles around a nursing point.

(g) *Environmental control*

It is important to determine at an early stage in planning whether, or to what degree, environmental control in a special care nursery is to depend on control of, for example, heat and humidity in rooms or within any individual room, isolette or incubator.

Central Milk Kitchens

46. In planning a central milk kitchen points of detail similar to those mentioned above are important, in particular, a suitable traffic flow from "dirty" to "clean" is essential and the amount of preparation and storage space in each section of the kitchen could be determined in relation to anticipated methods of working. At Bellshill the central milk kitchen was added at a late stage of planning and, while it provides an efficient service, its layout would not be recommended for other units in points of detail.

Supporting Services

47. (a) *Radiology*

The accommodation, including two radiodiagnostic rooms, was located in a central position to allow easy blacking-out for screening. The number of attendances for x-ray examination has increased from 1966, due to the commencement of lateral pelvimetry for all primagravida, but even so, one x-ray room and the use of one mobile unit has proved sufficient for routine examinations. The number of patients x-rayed was 1,847 in 1965 and 3,104 in 1966.

(b) *Central Sterile Supply Department*

When this hospital was planned, the development of Central Sterile Supply Departments was at an early stage and, in fact, the Bellshill Unit was added to the original plan, making use of a basement. The pattern for the supply of sterile materials to hospitals has evolved significantly in recent years and small packing and processing units of this kind are unlikely to be repeated. This unit has demonstrated that composite procedure packs can be prepared centrally and prove acceptable in use.

(c) *Kitchen and cafeteria*

The main lessons to be learned from the kitchen and cafeteria area are:-

(1) The relationship between the kitchen and the cafeteria must be carefully planned if excessive noise in the dining area is to be avoided.

(2) Changing accommodation for kitchen staff should be planned in direct relationship to the kitchen area.

(3) It is essential that the layout within the preparation/cooking area follows a logical work flow, and that there should be efficient arrangements for the transport of meals from the kitchen to the ward area.

Changing accommodation

48. The lack of a planned area of changing accommodation for staff has resulted in ad hoc arrangements which should be avoided in preparation of the functional brief for a new hospital.

Retention of Old Buildings

49. The decision to retain accommodation in the old hospital and use it in conjunction with the new building has proved unsatisfactory. In addition to some beds (23) with low grade ancillary and operating rooms, the hospital pharmacy, sewing room, a domestic staff changing area, some laboratory accommodation, storage and space used for physiotherapy classes remain separate from the new hospital. This not only involves a marked difference in the standard of in-patient accommodation but raises difficult problems of staffing, servicing and supervision.

Links with other Specialties and Services

50. At Bellshill a particular need was met by expanding an existing hospital. Isolated specialist hospitals however are at a disadvantage in liaison with other specialties. It is probable that this, together with the need to provide separate services at such units, make it highly unlikely that independent specialist maternity hospitals will be planned in future. The Department's subsequent policy expounded in the Hospital Plan for Scotland and carried out in the planning of schemes therein, has been to provide the main maternity hospital for an area either in, or in close association with, the district general hospital for that area.

Hospital Planning Notes

The Scottish Home and Health Department's Planning Committee have prepared interim Notes on various aspects of hospital design, to be issued as a series of Hospital Planning Notes. These interim Notes are intended to provide guidance for those concerned with hospital plans pending the issues of comprehensive bulletins based on longer term studies of particular departments and functions of hospitals. Account is taken in the Notes as they are issued of the information available from recent plans; and in view of the volume of planning work now being undertaken with relatively limited resources the Department hope that these Notes will help to avoid unnecessary duplication of work in preparing plans for units containing elements which have already been the subject of detailed study in connection with other schemes.

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